

IN THE CLAIMS

Please **SUBSTITUTE** the following amended claims for the pending claims with the same number (a marked up copy of the prior pending claim with all changes shown is supplied in the appendix):

1. (Amended five times) A plasma processing system, said plasma processing system comprising:

a substantially cylindrical plasma processing chamber used to process a substrate, said substantially cylindrical plasma processing chamber including a top region located on the top surface of said substantially cylindrical plasma processing chamber and a peripheral region located on a surface surrounding the periphery of said substantially cylindrical plasma processing chamber, said substantially cylindrical plasma processing chamber including at least an inner wall; and

F1 a gas flow system coupled to said plasma processing chamber, said gas flow system controlling flow of input gas into at least two different regions of said plasma processing chamber; said input gas being a source gas suitable for use to etch said substrate in said plasma processing chamber, said at least two different regions including at least one peripheral region and at least one top region of said plasma processing chamber said peripheral region of said plasma processing chamber not including any points of said top region of said plasma processing chamber, said gas flow system comprising at least one gas inlet for receiving said input gas that is to be delivered into said plasma processing chamber and at least first and second gas outlets that are each capable of delivering said input gas to said plasma processing system, at least a portion of said input gas being delivered to said plasma processing chamber via said first and second outlets.

F2 13. (Once Amended) A plasma processing system as recited in claim 1, wherein the at least a portion of the input gas is released into a second region, the first region being a top central region within the plasma processing chamber, and the input gas that is released into the first region is delivered by the first gas outlet.

14. (Once Amended) A plasma processing system as recited in claim 1, wherein the at least a portion of the input gas is released into a second region, the first region being an upper peripheral

region that surrounds the inner wall of the plasma processing chamber, and the input gas that is released into the second region is delivered by the second gas outlet.

15. (Once Amended) A plasma processing system as recited in claim 1, wherein the at least a portion of the input gas is released into a second region, the second region being a lower peripheral region that surrounds the inner wall of the plasma processing chamber, and the input gas that is released into the second region is delivered by the second gas outlet.

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16. (Once Amended) A plasma processing system as recited in claim 1, wherein the gas flow system receives a gas flow control signal for determining the amount or volume of the input gas that is delivered into the plasma processing chamber by each one of the first and second gas outlets.

19. (Amended four times) A plasma processing system for processing a substrate, comprising:

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a plasma processing chamber within which a plasma is both ignited and sustained for said processing, said plasma processing chamber having no separate plasma generation chamber, said plasma processing chamber having an upper end and a lower end; and

a gas flow system coupled to said plasma processing chamber, said gas flow system controlling the flow of input gas into at least two different regions of said plasma processing chamber, said at least two different regions including at least one peripheral region located at a side surface of said plasma processing chamber and at least one top region located at a top surface of said plasma processing chamber, said peripheral region being located closer to said upper end of said plasma processing chamber than said lower end of said plasma processing chamber.

37. (Amended four times) A plasma processing system for processing a substrate, comprising:

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a plasma processing chamber within which a plasma is both ignited and sustained for said processing, said plasma processing chamber having no separate plasma generation chamber, said plasma processing chamber having an upper end and a lower end, said substrate being processed in said lower end;

a coupling window disposed at an upper end of said plasma processing chamber.

an RF antenna arrangement disposed above a plane defined by said substrate when said substrate is disposed within said plasma processing chamber for said processing; and

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a gas flow system coupled to said plasma processing chamber, said gas flow system controlling the release of input gas, associated with forming a plasma, into a first, a second and a third region within said plasma processing chamber, said first region being a top central region located at the top surface of said plasma processing chamber, said second region being an upper peripheral region located on an upper surface of said plasma processing chamber proximate said upper end of said plasma processing chamber, said third region being a lower peripheral region located proximate said lower end of said plasma processing chamber.

Please **CANCEL** claim 12.

Please **ADD** the following claims:

38. (New) A plasma processing system as recited in claim 1 wherein said input gas is mixed before passing through said first and second gas outlets.

39. (New) A plasma processing system as recited in claim 38 wherein said input gas is formed by a mixture of gases before being received by said gas inlet.

40. (New) A plasma processing system as recited in claim 38 wherein said input gas is formed by a mixture of gases after being received by said gas inlet.

41. (New) A plasma processing system as recited in claim 1 wherein said gas flow system comprises a gas flow controller disposed between a gas source and a plurality of outputs, the gas source supplying said input gas, the plurality of outputs releasing said source gas into said plasma process chamber, a first output being configured to release said source gas into said peripheral region of said plasma process chamber, a second output being configured to release said source gas into said top region of said plasma process chamber, said gas flow controller being configured to control the delivery of said source gas into said plasma process chamber, said gas flow controller having a controller inlet arranged to receive said source gas from said gas source, and a plurality of controller outlets arranged to deliver said source gas to different locations within said plasma process chamber, a first controller outlet being configured to deliver said source gas to said first output, a second controller outlet being configured to deliver said source gas to said second output, said gas flow controller adjusting the amount of said source gas that is delivered to said first and second controller outputs so as to provide better process control.

42. (New) A plasma processing system as recited in claim 19 wherein said input gas is formed by a mixture of gases.

43. (New) A plasma processing system as recited in claim 19 wherein said top surface defines said upper end of said plasma processing chamber and wherein said peripheral region is located proximate to said upper end of said plasma process chamber.

44. (New) A plasma processing system as recited in claim 19 further comprising:
a coupling window disposed at an upper end of said plasma processing chamber; and
an RF antenna arrangement disposed above a plane defined by said substrate when said substrate is disposed within said plasma processing chamber for said processing.

45. (New) A plasma processing system as recited in claim 19 further comprising:
an electromagnet arrangement disposed above said plane defined by said substrate, said electromagnet arrangement being configured so as to result in a radial variation in the static magnetic field topology within said plasma processing chamber in the region proximate said RF antenna when at least one direct current is supplied to said electromagnet arrangement, said radial variation being effective to affect processing uniformity across said substrate; and
a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said radial variation in said magnetic field topology within said plasma processing chamber in said region proximate said antenna to improve said processing uniformity across said substrate.

46. (New) A plasma processing system as recited in claim 37 wherein said input gas is formed by a mixture of gases.

47. (New) A plasma processing system as recited in claim 37 further comprising:
an electromagnet arrangement disposed above said plane defined by said substrate, said electromagnet arrangement being configured so as to result in a radial variation in the static magnetic field topology within said plasma processing chamber in the region proximate said RF antenna when at least one direct current is supplied to said electromagnet arrangement, said radial variation being effective to affect processing uniformity across said substrate;
a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said

a dc power supply coupled to said electromagnet arrangement, said dc power supply having a controller to vary a magnitude of said at least one direct current, thereby changing said radial variation in said magnetic field topology within said plasma processing chamber in said region proximate said antenna to improve said processing uniformity across said substrate.

48. (New) A plasma processing system as recited in claim 37 wherein said lower peripheral region is located on a lower surface surrounding the periphery of said plasma processing chamber.

49. (New) A plasma processing system as recited in claim 37 further comprising a chuck for supporting said substrate during said processing and wherein said lower peripheral region is located on said chuck near the edges of said substrate.

50. (New) A gas flow system for distributing gases within a plasma process chamber suitable for processing a substrate, the gas flow system comprising:

a gas source capable of supplying an input gas;

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a plurality of outputs for releasing an output gas formed by a mixture of gases into said plasma process chamber, a first output being configured to release said output gas into an inner region of said plasma process chamber, a second output being configured to release said output gas into an outer region of said process chamber, said inner region corresponding to a center portion of said substrate and said outer region corresponding to an outer portion of said substrate; and

a gas flow controller disposed between said gas source and said plurality of outputs, said gas flow controller being configured to control the delivery of said output gas into said plasma process chamber, said gas flow controller having an inlet arranged to receive said input gas from said gas source, and a plurality of outlets arranged to deliver said output gas to different locations within said plasma process chamber, a first outlet being configured to deliver said output gas to said first output, a second outlet being configured to deliver said output gas to said second output, said gas flow controller adjusting the amount of said output gas that is delivered to said first and second outputs so as to provide better process control.

51. (New) A plasma processing system as recited in claim 50 wherein said input gas is formed by a mixture of gases.

52. (New) A plasma processing system as recited in claim 50 wherein said input gas is mixed inside said gas flow controller.

53. (New) A plasma processing system as recited in claim 19 wherein said substrate is processed in said lower end of said plasma processing chamber.

54. (New) A plasma processing system as recited in claim 19 wherein said peripheral region is located closer to said top surface than said substrate when said substrate is disposed inside said plasma processing chamber for processing.
